

Work Order ID 84263

\*84263\*

Page 1

May-08-12 2:42:13 PM

Item ID: D212-664-201

Accept

\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/05/08 Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr | Revision Nbr |
|----------|--------------|
|----------|--------------|

|              |             |
|--------------|-------------|
| D212-664-241 | Rev D (DEO) |
|--------------|-------------|

|         |   |
|---------|---|
| DSI9563 | B |
|---------|---|

100

0.00

\*100\*

DOCUMENT CONTROL

DAS  
16  
12/07/16

7/16 MLJ 12-7-16

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D212-664-201 CHG005

110

0.00

\*110\*

Pick Kit

Packaging

MO 12-6-26

Packaging

Memo

0.00

Packaging

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

Work Order ID 84263

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May-08-12 2:42:13 PM

Item ID: D212-664-201

Accept

\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start \*NR1\*

QC: Date: SPC (Y/N): Date:

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 120                            | BENDING MACHINE - CROSSTUBES                                       | 0.00                 |         |        |              |               |               |                  |                |
| *120*                          |  |                      |         |        |              |               |               |                  |                |
| CNC Bend 2                     | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| CNC Alpha 160 Bender           | Bend tube as per Dwg D212-664-241 using CNC bender program 212-aft |                      |         |        |              |               |               |                  |                |
| 130                            | QC15- Crosstube Dimensional Check                                  | 0.00                 |         |        |              |               |               |                  |                |
| *130*                          |  |                      |         |        |              |               |               |                  |                |
| QC                             | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |  |                      |         |        |              |               |               |                  |                |

*JW/RN*

12-6-27

*S17/06/27*

*(TU)*

| W/O: 84263 |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE       | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|            |      |                    |    |      |     |                                     |                          |
|            |      |                    |    |      |     |                                     |                          |

Part No: D212-664-201 PAR #:        Fault Category: X False NCR: Yes No DQA: Not Date: 12/07/19  
 Resolution:        Disposition: Use as is QA: N/C Closed:        Date: 12/7/20

| NCR: 17-1588 |      | WORK ORDER NON-CONFORMANCE (NCR)               |                                |                                 |                |                           |                       |                          |
|--------------|------|--|--------------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE         | STEP | Description of NC<br>Section A                 | Corrective Action<br>Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|              |      |  | Initials<br>Chief Eng          | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
| 12/6/27      | 120  | CRUSHING AFTER<br>BENDING IS OVER<br>TOLERANCE | GP<br>12/6/17<br>Q51042        | Acceptable per<br>attached SR   | N/A            | S<br>12/6/27              | GP<br>12/6/17         | S<br>12/6/27             |
|              |      |  |                                |                                 |                |                           |                       |                          |
|              |      |  |                                |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Work Order ID 84263

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Item ID: D212-664-201

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Crosstube Aft

Stop \*NS2\*

Start Date: 08/05/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

140

0.00

\*140\*

Crosstubes

0.00

Crosstubes

Memo

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550, DT8551, drill table DT8577 and locate tower holes #8 as per QSI0010.

2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241

4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

MO/RM

12-6-28

MO

12-6-28

150

\*150\*

Hand Finishing

Hand Finishing Crosstubes

Crosstubes Chemical Conversion

0.00

Memo

0.00

Chemical Conversion Coat as within 24 hours of bending and drilling

150

Qc S \*wear latex gloves\* 5/12/05

151

\*Wear latex gloves\*

1-clean crosstube with wash n wipe

12-7-6

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

Work Order ID 84263

\*84263\*

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Item ID: D212-664-201

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

166 QC3- Inspect Part Finish 0.00

\*160\*156

QC Memo 0.00  
Quality Control

170 QC5- Inspect part completeness to step on W/O 0.00

\*170\*

QC Memo 0.00  
Quality Control

180 Outsource process - NDT per QSI038 4.1 0.00

\*180\*

Outsource2 Memo 0.00

Outsource process - NDT  
Liquid Penetrant Inspection as per QSI 038  
Issue P/O: 17380  
LPI as per ASTM 1417 Level 2  
Attach copy of NDT results to work order

CL 12/07/09 ①

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



Work Order ID 84263

\*84263\*

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May-08-12 2:42:13 PM

Item ID: D212-664-201

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

190

Receive & Inspect for Damage & Mat'l Certs  
Packaging

0.00

\*190\*

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

**\*\* Wear latex gloves \*\***

200

QC5- Inspect part completeness to step on W/O

0.00

\*200\*

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D212-664-241

**\*\* Wear latex gloves \*\***

201 **\*\* Wear latex gloves \*\***

1- Pressure wash and then use wash 'n wipe  
to clean crossstube before chemical conversion

AS 12-7-6

202

CARRY OUT 155, 156 & 157

(155 AS 12-7-6)

Inspected QC7 W/ 12-07-09

| W/O: 84263 |      | WORK ORDER CHANGES   |          |          |     |                                     |                          |
|------------|------|--|----------|----------|-----|-------------------------------------|--------------------------|
| DATE       | STEP | PROCEDURE CHANGE   | By       | Date     | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
| 12/07/06   | 201  | AFTER COMPLETION OF STEP 201 MOVE TO STEP 155, 156, 157 ONCE COMPLETE MOVE TO STEP 210 | P. Smith | 12/07/06 | 1   |                                     |                          |
|            |      |  |          |          |     |                                     |                          |

Part No: D 212-664-201 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

**Work Order ID 84263****\*84263\***

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Item ID: D212-664-201

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

210

Spray Painting per QSI005 4.2

0.00

**\*210\***

SprayPaint

**\*\* Wear latex gloves \*\***

0.00

SprayPaint

Memo

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube as per DEO D212-667-241 with White Imron as per QSI 005 4.2

PRIME:

Start Time: 10:00

Finish Time: 11:00

7/12/07 09 ①

PAINT:

Start Time: 10:00

Finish Time: 11:00

7/12/07 10 ①

220

QC14- Inspect Spray Paint

0.00

**\*220\***

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

DAS  
16  
8-89 12/4/16

**Dart Aerospace Ltd**

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Work Order ID 84263

**\*84263\***

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May-08-12 2:42:13 PM

Item ID: D212-664-201

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Aft

Start Date: 08/05/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 28/05/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

230

0.00

**\*230\***

Crosstubes

Crosstubes

Memo

0.00

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9563 and QSI 015

A/R Proseal 890 Batch: 121287

3-Install clamps as per Dwg D212-664-241. Torque clamps to 80-100 in lb.

*Handwritten:* 12-7-15

240

QC5- Inspect part completeness to step on W/O

0.00

**\*240\***

QC

Memo

0.00

Quality Control

250

Pick Kit

0.00

**\*250\***

Packaging

Memo

0.00

Packaging

*Handwritten:* 12/16/16

*Handwritten:* DAS 15 12/16/16

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                                |                                 |                |                           |                       |                          |
|------|------|----------------------------------|--------------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action<br>Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng           | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Picklist Print

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Work Order ID: 84263

\*84263\*

Parent Item: D212-664-201

\*D212-664-201\*

Parent Item Name: Crosstube Aft

Start Date: 08/05/2012

Required Date: 28/05/2012

Start Qty: 1.00

Required Qty: 1.00

## Comments:

IPP Rev:E04.02.16ReformatK/DS

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status  |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|---------|
| D212-664-<br>201TRNRevC         |                        | Manufactured  | No          |                     |                  | 110             | Each               | 0.0000         | 1           | 1            |               | MO             | 12-6-26 |
| *D212-664-201TRNRevC*           |                        |               |             |                     |                  |                 |                    |                |             | **           |               |                |         |
| Crosstube Turning Detail        |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |         |
| D3595-063-530                   |                        | Manufactured  | No          |                     |                  | 230             | Each               | 183.0000       | 2           | 2            |               | AB             | 12-7-15 |
| *D3595-063-530*                 |                        |               |             |                     |                  |                 |                    |                |             | **           |               |                |         |
| RUBBER CUSHION                  |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |         |

## Location

## Loc Qty

## Loc Code

LG

144

79932

64

82656

80

MAT052

39

63407

6

67185

6

70067

18

72745

2

75783

7

D2940-1

Manufactured No

230

Each

39.0000

2

2

\*D2940-1\*

\*\*

Support

AB 12-7-15

## Location

## Loc Qty

## Loc Code

LG052

39

79118

19

82657

20

2

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



# Picklist Print

May-08-12 2:42:17 PM

Page 2

Work Order ID: 84263

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft

\*84263\*

\*D212-664-201\*

Start Date: 08/05/2012

Required Date: 28/05/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-28

Purchased

No

230

Each

83.0000

4

4

\*MS21920-28\*

Clamp(per MIL-DTL-8783C)

\*\*

12-7-15

## Location

## Loc Qty

## Loc Code

FG

5

105884

5

LG050

58

116839

2

118713

4

120054

2

121067

50

LG051

20

121440

20

D3428-1

Manufactured

No

250

Each

33.0000

1

1

\*D3428-1\*

Placard

\*\*

## Location

## Loc Qty

## Loc Code

ST042

33

78933

6

81881

17

83582

10

MS21042L6

Purchased

No

250

Each

702.0000

6

6

\*MS21042L6\*

Nut

\*\*

12-7-16

## Location

## Loc Qty

## Loc Code

ST300

702

117677

25

118384

3

118927

48

119075

426

120308

200

May-08-12 2:42:17 PM

Shop Packet Print

Page 2

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Picklist Print

May-08-12 2:42:17 PM

Page 3

Work Order ID: 84263

\*84263\*

Parent Item: D212-664-201

\*D212-664-201\*

Parent Item Name: Crosstube Aft

Start Date: 08/05/2012

Required Date: 28/05/2012

Start Qty: 1.00

Required Qty: 1.00

AN960JD616

NAS1149D0663J

Purchased

No

250

Each

0.0000

18

18

\*AN960.ID616\*

Washer

\*\*

AN6-40A

Purchased

No

250

Each

114.0000

4

4

\*AN6-40A\*

Bolt

\*\*

## Location

## Loc Qty

## Loc Code

ST342

114

120187

66

120833

4

121349

19

121584

25

AN6-41A

Purchased

No

250

Each

55.0000

2

2

\*AN6-41A\*

Bolt

\*\*

## Location

## Loc Qty

## Loc Code

ST342

55

119749

5

120423

50

2

May-08-12 2:42:17 PM

Shop Packet Print

Page 3

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

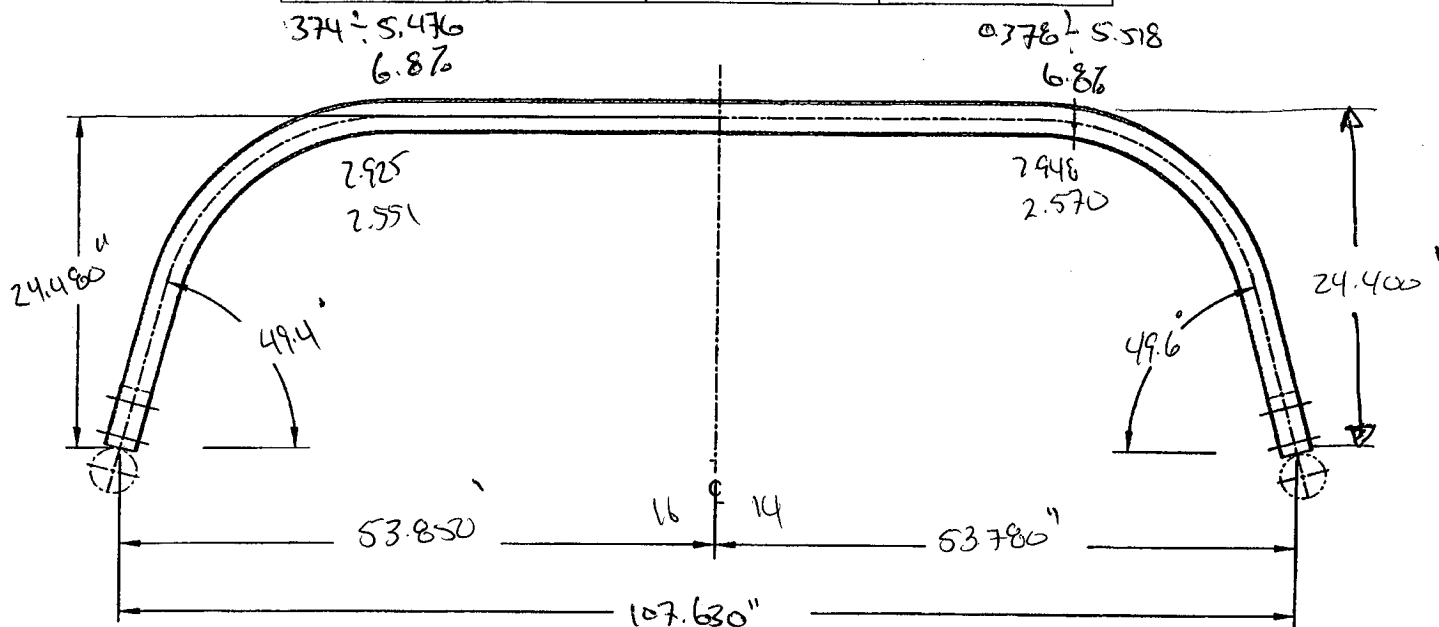
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

|   |  |                     |                    |
|---|--|---------------------|--------------------|
| <b>DART AEROSPACE LTD</b>                         |  | <b>Work Order:</b>  | 84263              |
| <b>Description:</b> Crosstube High Aft (205/212)  |  | <b>Part Number:</b> | D212-664-201       |
| <b>Inspection Dwg:</b> D212-664-241 <b>Rev:</b> D |  |                     | <b>Page 1 of 1</b> |

| Required Dimension | Min    | Max    |
|--------------------|--------|--------|
| Height             | 24.17  | 24.43  |
| 1/2 Span           | 53.59  | 53.85  |
| Angle              | 49     | 52     |
| Total Span         | 107.18 | 107.70 |



| Comments       |                      |
|----------------|----------------------|
| Side A = 6.87% | crushing @ 16 passes |
| Side B = 6.87% | crushing @ 14 passes |

|                 |          |
|-----------------|----------|
| QC15 Inspection | 8        |
| Date            | 17/06/27 |

| Rev | Date     | Change                            | Revised by | Approved |
|-----|----------|-----------------------------------|------------|----------|
| A   | 07.02.06 | New Issue                         | KJ/JM      |          |
| B   | 07.05.08 | Dimensions updated per Dwg rev. C | KJ/JLM     |          |
| C   | 10.04.01 | Dwg Rev updated                   | KJ         |          |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# DART SERVICE INSTRUCTION

TO AMEND INSTRUCTIONS FOR CONTINUOUS AIRWORTHINESS ICA-D212-664 Rev. 6 OR LATER

REF. CANADIAN STC: SH01-9

REF. FAA STC: SR01298NY

REF. EASA STC: EASA.IM.R.S.01304

## PURPOSE:

The supports on the following crosstubes are now installed using Proseal instead of Magnobond:

D212-664-101/-101B @ CHG 005

D412-664-105 @ CHG 002

D212-664-107/-107B @ CHG 002

D212-664-201/-201B @ CHG 005

D212-664-207/-207B @ CHG 002

## CHANGE:

For the crosstubes listed above, section 32.4 of ICA-D212-664 is amended as follows. Use Figure 1 of this service instruction and Figures 32-2 to 32-9 of ICA-D212-664 for further reference. For crosstubes of an earlier change number, it is recommended that if the supports are removed, the supports should be reinstalled using the procedure listed below.

### 32.4 SUPPORT INSTALLATION

- 32.4.1 Locate the area on the crosstube for installation of support (see Figure 1 of this service instruction). For D212-664-101/-107/-201/-207 and D412-664-105 crosstubes, the outward face of the support tabs should be 14.0" (355mm) from the crosstube center for 204/205/210/412/UH-1 aircraft. For installation on 214B/B-1 aircraft, the outward face of the support tabs should be 13.75" (349mm). Ensure paint finish of crosstube is intact; touch up as required per Chapter 5 (5.3.9) of ICA-D212-664.
- 32.4.2 If present, remove any paint/primer on bottom of supports. Abrade mating surfaces of support and crosstube with 400-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.3 Ensure a layer of 3M Scotch-Weld 2216 B/A Epoxy Adhesive is on the bottom of the support. If required, either apply or touch-up support to have a 0.03" to 0.05" thick layer of adhesive over the entire mating surface. Allow supports to cure for 24 hours.
- 32.4.4 Abrade mating surfaces of support (after cure) and crosstube with 180-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.5 Apply a 0.04" to 0.07" thick layer of Proseal 890 Class B or AMS-S-8802 Class B sealant underneath applicable support and install support as shown in Figure 1 of this service instruction.
- 32.4.6 Install the clamps opposite to crosstube support as shown in section A-A of Figure 1. Install rubber cushions underneath each clamp around the bottom circumference of the crosstube up to the crosstube centerline. Torque clamps 80-100 in-lb (9.0-11.3 Nm). It is acceptable to use smaller or larger sized MS21920-XX clamps than those listed in ICA-D212-664, ensure that after torquing the clamps per this instruction, the nuts are in safety but not bottomed out
- 32.4.7 Prior to installing crosstube on aircraft, allow supports to cure for 72 hours and recheck torque on clamps.

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 11.07.20

CERT. NO.: SH01-9

ISSUE NO.: 3

|  |                                 |  |              |
|--|---------------------------------|--|--------------|
| B  | ADD 3M 2216 ADHESIVE TO SUPPORT | CP                                     | 11.07.15     |
| A  | NEW ISSUE                       | CP                                     | 11.06.14     |
| REV.   | DESCRIPTION                     | BY                                     | DATE         |
| DESIGN   | <i>[Signature]</i>              | DART AEROSPACE LTD                     |              |
| DRAWN  | <i>[Signature]</i>              | HAWKESBURY, ONTARIO, CANADA            |              |
| CHECKED  | <i>ASS</i>                      | DRAWING NO.                            | REV. B       |
| MFG. APPR.   | <i>N/A</i>                      | DSI 9563                               | SHEET 1 OF 2 |
| APPROVED   | <i>[Signature]</i>              | TITLE                                  | SCALE        |
| DE APPR.   | <i>[Signature]</i>              | SUPPORT INSTALLATION CHANGE            | NTS          |
| DATE   | 11.07.15                        | COPYRIGHT © 2011 BY DART AEROSPACE LTD |              |
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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

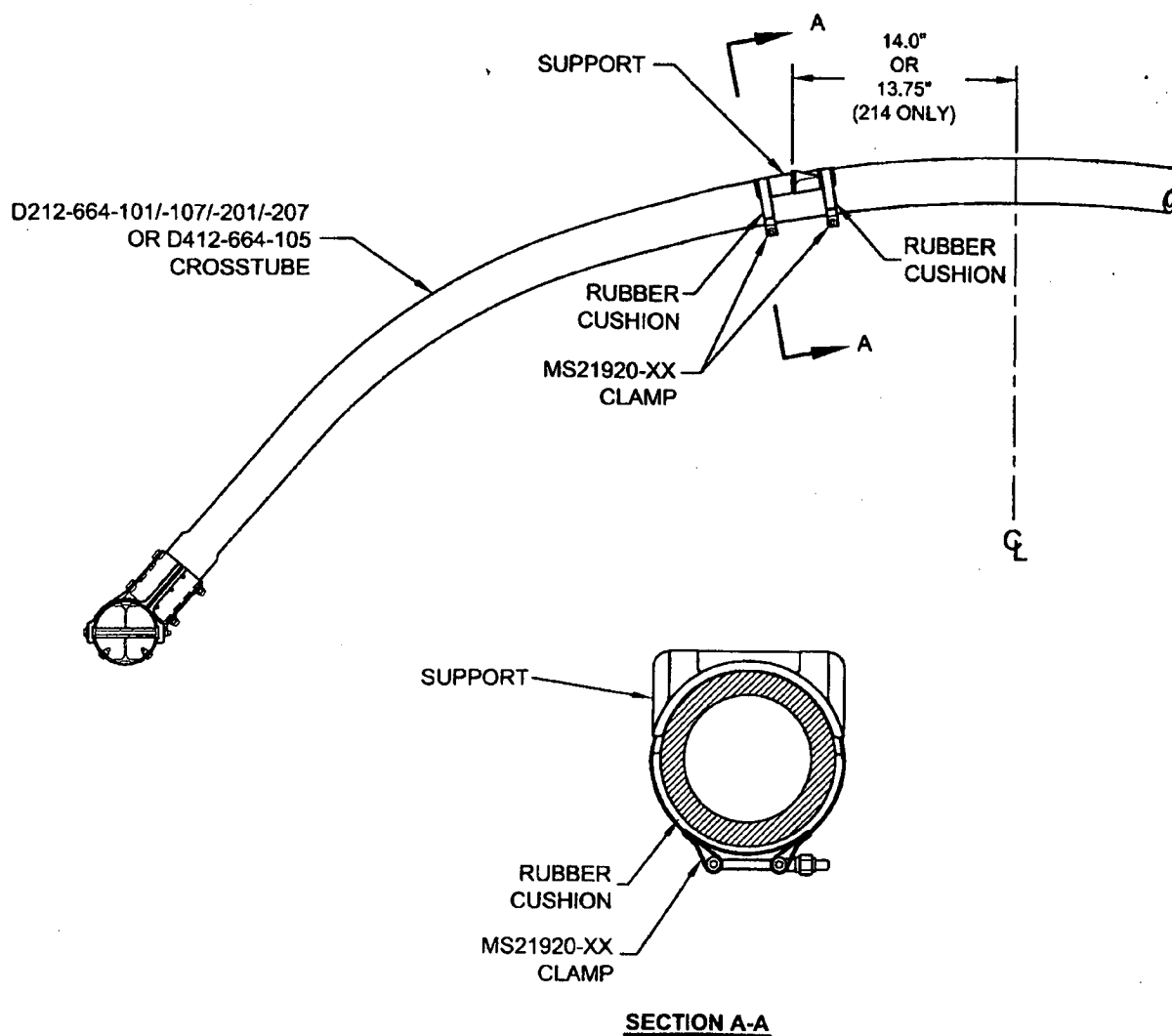
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries





**FIGURE 1: SUPPORT INSTALLATION**

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED  
*[Signature]*  
BY: D. SHEPHERD (DE # 02)

DATE: 11.07.20  
CERT. NO.: SH01-9  
ISSUE NO.: 3

|            |                    |  |              |
|------------|--------------------|--|--------------|
| DESIGN     | Q                  | <b>DART AEROSPACE LTD</b>  |              |
| DRAWN      | Q                  | HAWKESBURY, ONTARIO, CANADA  |              |
| CHECKED    | ASS                | DRAWING NO.  | REV. B       |
| MFG. APPR. | N/A                | DSI 9563   | SHEET 2 OF 2 |
| APPROVED   | <i>[Signature]</i> | TITLE  | SCALE        |
| DE APPR.   | <i>[Signature]</i> | SUPPORT INSTALLATION CHANGE  | NTS          |
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82263

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

| Item | Qty<br>-241 | Qty<br>-241B | Part Number    | Description   |
|------|-------------|--------------|----------------|---|
| 1    | X           |              | D212-664-241   | CROSSTUBE ASSEMBLY (205/212 HIGH AFT)   |
| 2    |             | X            | D212-664-241B  | CROSSTUBE ASSEMBLY (214 HIGH AFT)   |
| 3    | 1           | 1            | D6006-129      | CROSSTUBE   |
| 4    | 2           | 2            | D2940-1        | SUPPORT   |
| 5    | 4           | 4            | D3595-063-530  | RUBBER CUSHION  |
| 6    | 4           | 4            | MS21920-28     | CLAMP (OR MS21920-30)   |
| 7    | A/R         | A/R          | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023<br>ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,<br>TYPE II, CLASS 2 ADHESIVE) |

# **GENERAL NOTES:**

- MATERIAL: MANUFACTURED FROM D6006-129  
FINISHED LENGTH = 124.362±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664)  
D212-664-241B = 44.2 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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|            |   |   |              |
|------------|---|---|--------------|
| D          | REFORMAT/REVISE GENERAL NOTES/PART LIST;<br>REORGANIZED VIEWS AND REFORMATTED DRAWING<br>TO CURRENT STANDARDS; ADD -241B (ZN D4-2, B4-2);<br>REMOVED REF & ADD TOLERANCES (ZN D8-3 & C4-3,<br>C6-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-045 (ZN<br>A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE<br>TO SHEET 4 | RF  | 09.09.30     |
| C          | REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND<br>6398, CUSHION, REVERSE CLAMPS   | PH  | 07.03.08     |
| B          | ADD HOLES FOR COMPATABILITY WITH BHT/AA<br>SKIDTUBES  | PH  | 05.02.04     |
| A          | NEW ISSUE   | PH  | 00.12.12     |
| REV.       | DESCRIPTION   | BY  | DATE         |
| DESIGN     | PH  | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA   |              |
| DRAWN      | RF  |   |              |
| CHECKED    | PH  | DRAWING NO.   | REV. D       |
| MFG. APPR. | PH  | D212-664-241  | SHEET 1 OF 4 |
| APPROVED   | PH  | TITLE   | SCALE        |
| DE APPR.   | PH  | CROSSTUBE ASS'Y (205/212 HI AFT)  | NTS          |
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|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

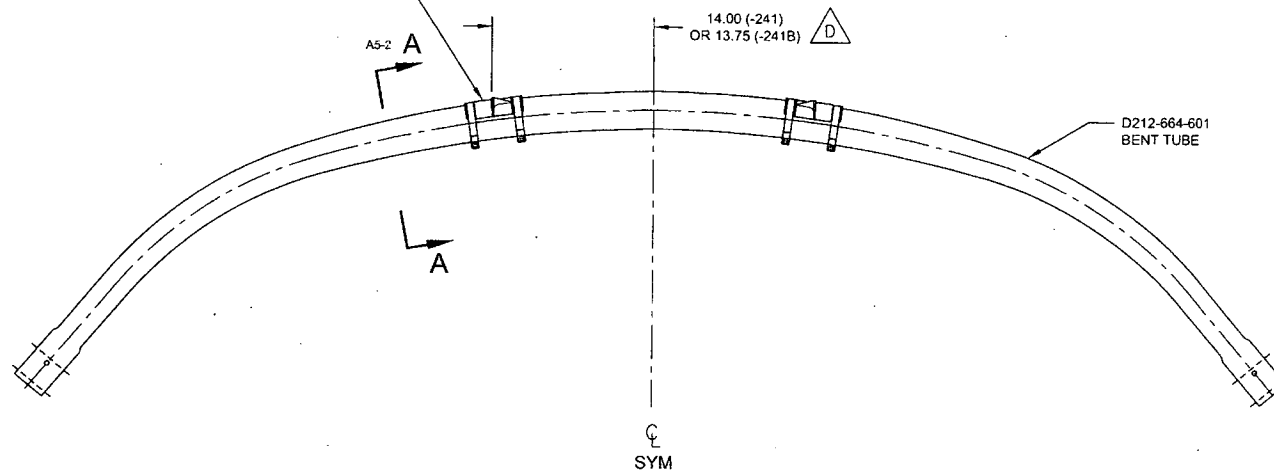
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

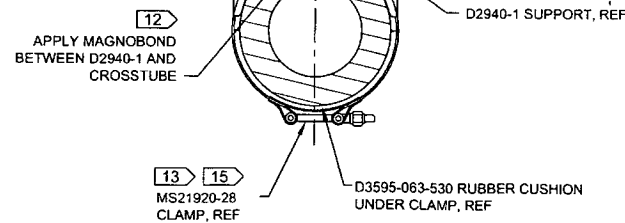
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

12 13 15  
 D2940-1 SUPPORT  
 MS21920-28 CLAMP, 2X  
 D3595-063-530 RUBBER CUSHION, 2X  
 2 PL



**D212-664-241/-241B  
 ASSEMBLY DETAIL**



**SECTION A-A  
 SCALE 4X**

84263

600#11-614  
 11.07.26  
**UNDER REVIEW**  
 09/11/06.13

**DEO ATTACHED**

**RELEASED**  
 2009-10-28

|            |          |   |              |
|------------|----------|---|--------------|
| DESIGN     | PH       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA  |              |
| DRAWN      | RF       |   |              |
| CHECKED    | 97       | DRAWING NO.   | REV. D       |
| MFG. APPR. | 15       | D212-664-241  | SHEET 2 OF 4 |
| APPROVED   | 160      | TITLE   | SCALE        |
| DE APPR.   | 14       | CROSSTUBE ASSY (205/212 HI AFT)   | NTS          |
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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

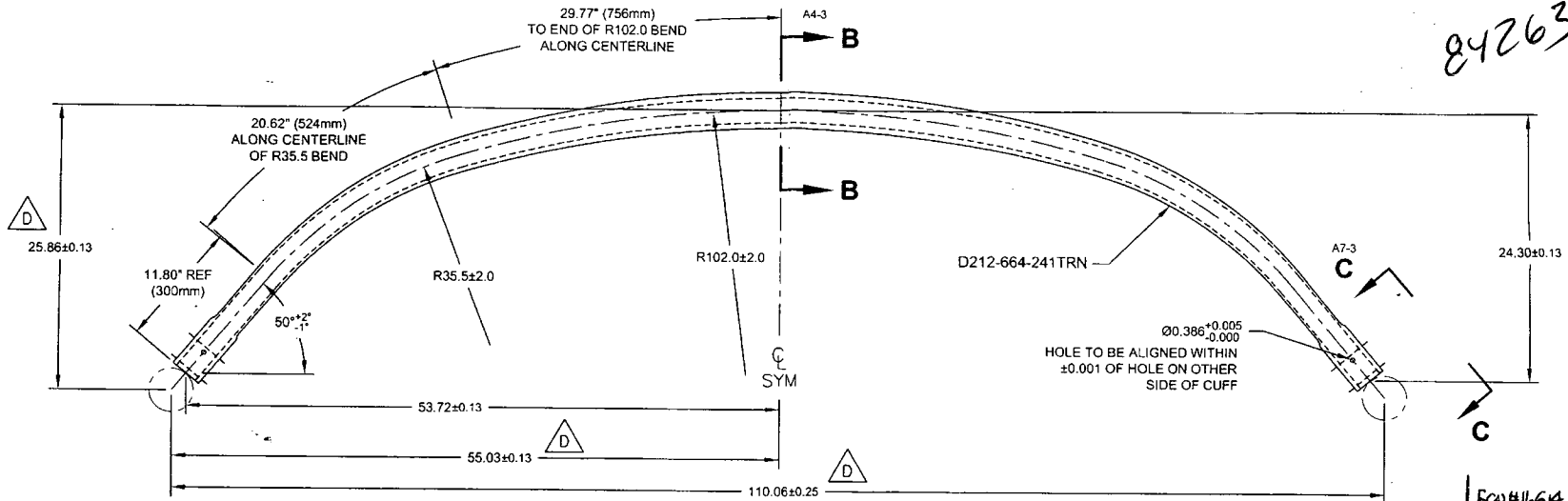
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

8 7 6 5 4 3 2 1

84263



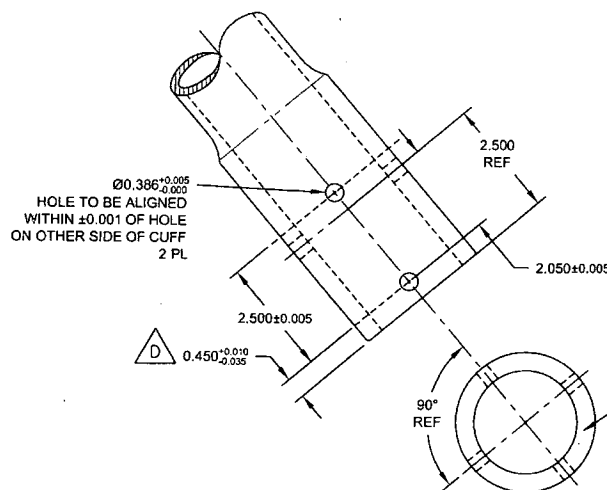
**D212-664-601** 10 D  
**BENDING AND DRILLING DETAIL**

ECO #11-614  
K.07.26

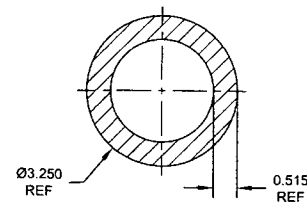
**UNDER REVIEW**  
9/11/09

**DEO ATTACHED**

**RELEASED**  
2009-10-29



**VIEW C-C: CUFF DETAIL** D2-3  
SCALE 3X



**SECTION B-B** D4-3  
SCALE 4X

|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     | PH       | <b>DART AEROSPACE LTD</b>  |              |
| DRAWN      | RF       | HAWKESBURY, ONTARIO, CANADA  |              |
| CHECKED    | 9        | DRAWING NO.  | REV. D       |
| MFG. APPR. | 18       | D212-664-241   | SHEET 3 OF 4 |
| APPROVED   | 19       | TITLE  | SCALE        |
| DE APPR.   | 11       | CROSSTUBE ASSY (205/212 HI AFT)  | NTS          |
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8 7 6 5 4 3 2 1

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

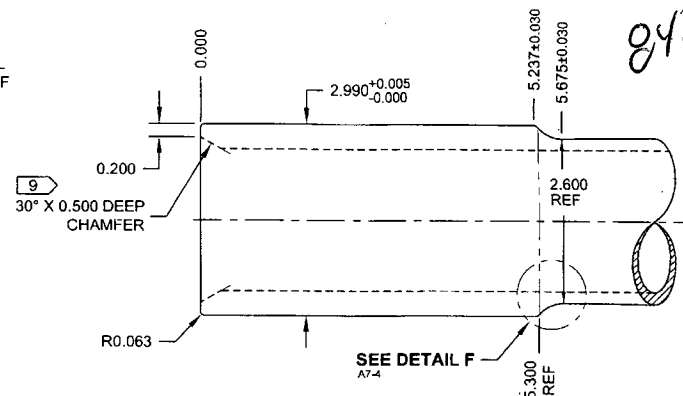
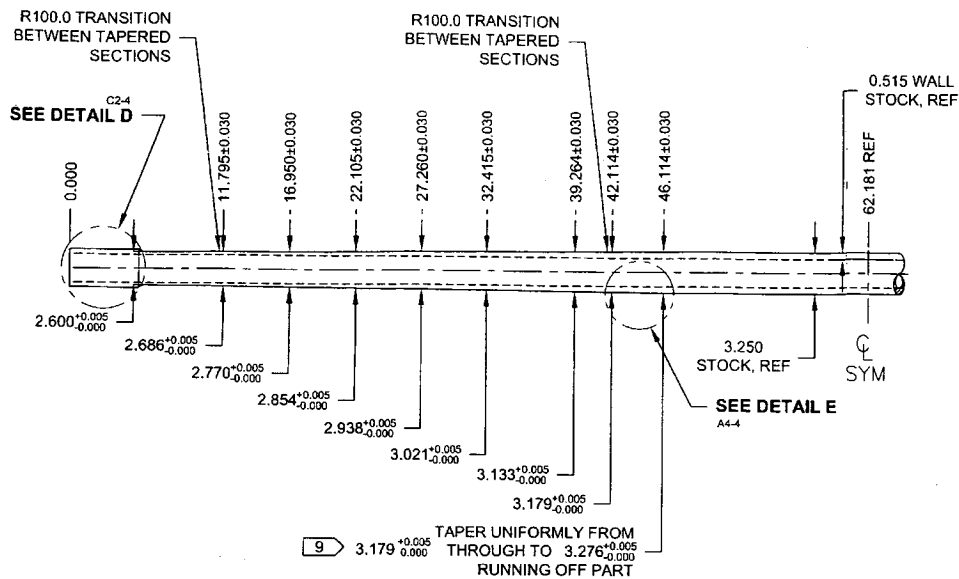
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

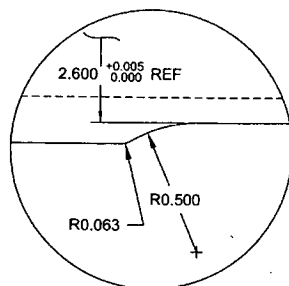
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



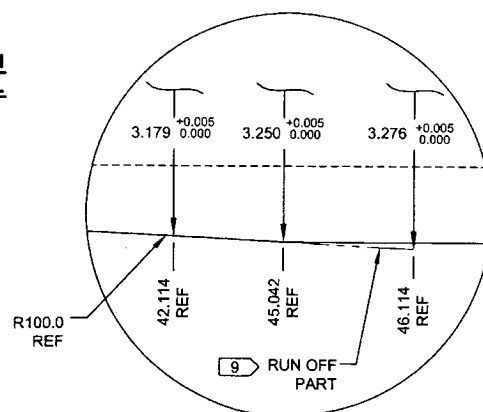


**DETAIL D:**  
**CROSSTUBE CUFF** C8-4  
SCALE 5X



**DETAIL F:**  
**CUFF TRANSITION** C2-4  
SCALE 10X

**D212-664-241TRN**  
**TURNING DETAIL**



**DETAIL E:**  
**TAPER RUN-OFF** C5-4  
NOT TO SCALE

84263

100 A11-614  
K.07.28

UNDER REVIEW

9.1.08.13

DEO ATTACHED

RELEASED

2009-10-29

|  |          |  |              |
|--|----------|--|--------------|
| DESIGN   | PH       | <b>DART AEROSPACE LTD</b>              |              |
| DRAWN  | RF       | HAWKESBURY, ONTARIO, CANADA            |              |
| CHECKED  | 9        | DRAWING NO.                            | REV. D       |
| MFG. APPR.   | 10       | D212-664-241                           | SHEET 4 OF 4 |
| APPROVED   | 10       | TITLE                                  | SCALE        |
| DE APPR.   | 10       | CROSSTUBE ASSY (205/212 HI AFT)        | NTS          |
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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

|                             |  |               |   |  |                                |                           |              |
|-----------------------------|--|---------------|---|--|--------------------------------|---------------------------|--------------|
| DRAWING NO.<br>D212-664-241 | TITLE<br>CROSSTUBE ASSY (205/212 HI AFT) | REV. D        | DART AEROSPACE LTD<br>ENGINEERING ORDER |  | D.E.O. NO.<br>D212-664-241-D-1 | SHEET NO.<br>SHEET 1 OF 2 | SCALE<br>NTS |
| DRAWN                       | CHECKED                                  | MFG. APPR.    | APPROVED                                |  | DE APPR.                       |                           |              |
| DATE 11.04.07               | DATE 11.04.11                            | DATE 11.04.12 | DATE 11/04/12                           |  | DATE 11.04.12                  |                           |              |

**PURPOSE:**

ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

**CHANGE:**

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

**IS:**

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND  
PAINT OUTSIDE PER DART QSI 005 4.2  
REMOVE MASKING AND APPLY CLEAR COAT

**WAS:**

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2

RELEASED  
2011-04-18

UNDER REVIEW

11.06.13

ECN#1-614

11.07.28

84263

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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

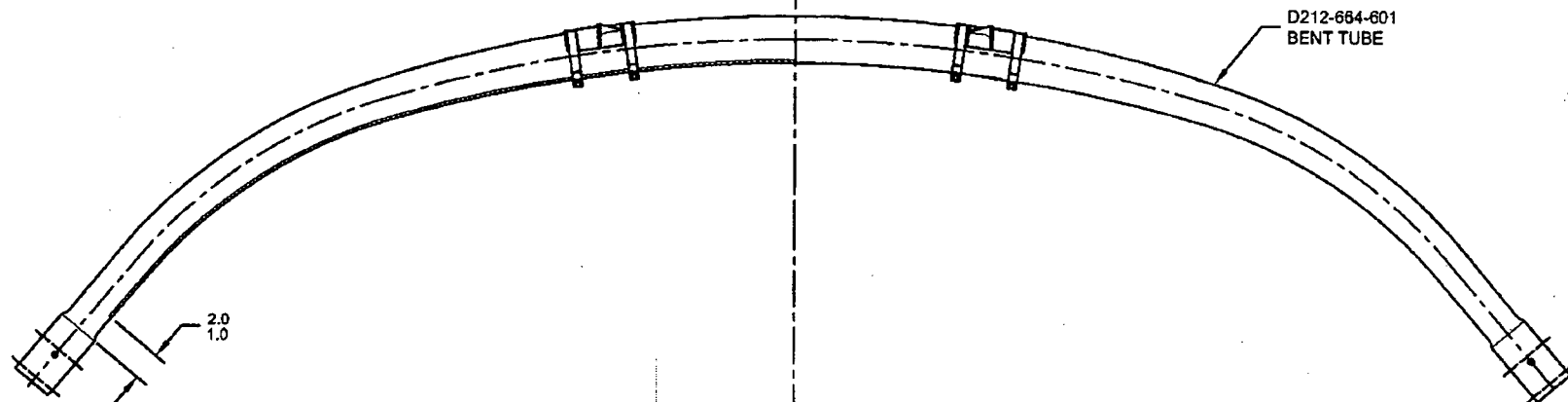
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

|                             |  |                     |   |                   |                                |                           |              |
|-----------------------------|--|---------------------|---|-------------------|--------------------------------|---------------------------|--------------|
| DRAWING NO.<br>D212-664-241 | TITLE<br>CROSSTUBE ASSY (205/212 HI AFT) | REV. D              | DART AEROSPACE LTD<br>ENGINEERING ORDER |                   | D.E.O. NO.<br>D212-664-241-D-1 | SHEET NO.<br>SHEET 2 OF 2 | SCALE<br>NTS |
| DRAWN                       | CHECKED <i>UP</i>                        | MFG. APPR. <i>E</i> | APPROVED <i>MA</i>                      | DE APPR. <i>#</i> |                                |                           |              |
| DATE 11.04.07               | DATE 11.04.11                            | DATE 11.04.12       | DATE 11/04/12                           | DATE 11.04.12     |                                |                           |              |

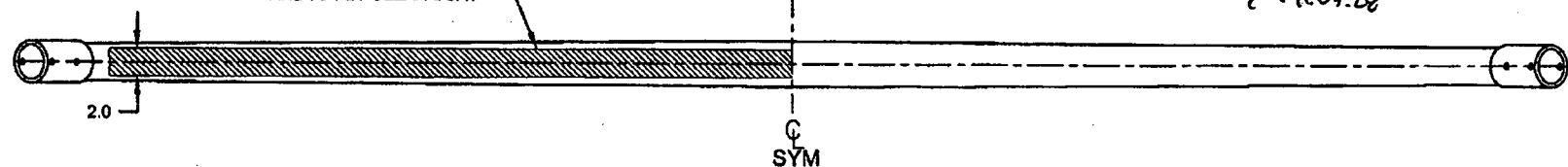
IS:

WAS:



D212-664-241-241B  
ASSEMBLY DETAIL

MASK AREA PRIOR TO PAINTING,  
REMOVE MASKING AFTER PAINT  
AND APPLY CLEAR COAT



**RELEASED**  
2011-04-18

**UNDER REVIEW**

*UP* 11.06.13  
11.07.20

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

|                             |   |                     |   |  |                                |                           |              |
|-----------------------------|---|---------------------|---|--|--------------------------------|---------------------------|--------------|
| DRAWING NO.<br>D212-664-241 | TITLE<br>CROSSTUBE ASS'Y (205/212 HI AFT) | REV. D              | <b>DART AEROSPACE LTD<br/>ENGINEERING ORDER</b> |  | D.E.O. NO.<br>D212-664-241-D-2 | SHEET NO.<br>SHEET 1 OF 1 | SCALE<br>NTS |
| DRAWN <i>q</i>              | CHECKED <i>ASS</i>                        | MFG. APPR. <i>B</i> | APPROVED <i>MP</i>                              |  | DE APPR. <i>#</i>              |                           |              |
| DATE 11.07.15               | DATE 11.07.20                             | DATE 11.07.21       | DATE 11/27/21                                   |  | DATE 11.07.21                  |                           |              |

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:**

**IS:**

| Item | Qty<br>-241 | Qty<br>-241B | Part Number     | Description                   |
|------|-------------|--------------|-----------------|-------------------------------|
| 7    | A/R         | A/R          | PROSEAL 890 B-2 | SEALANT, AMS-S-8802 CLASS B-2 |

**WAS:**

|   |     |     |                |   |
|---|-----|-----|----------------|---|
| 7 | A/R | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023<br>ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,<br>TYPE II, CLASS 2 ADHESIVE) |
|---|-----|-----|----------------|---|

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

**IS:**

- 12) TO INSTALL D2940-1 SUPPORT: ABRABE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

**WAS:**

- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

**RELEASED**  
2011-07-28  
*W*

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries





## LIQUID PENETRANT TEST REPORT

P- 12192

|                  |                                      |                 |                   |               |      |                                     |    |                          |
|------------------|--------------------------------------|-----------------|-------------------|---------------|------|-------------------------------------|----|--------------------------|
| CLIENT           | DART AeroSpace                       | DATE            | July 6/2012       | PAGE          | 1    | OF                                  | 1  |                          |
| ATTENTION        | LINDA / ANDY                         | ACUREN JOB No.  | 188-12-C0278      | TIME          | AM   | <input checked="" type="checkbox"/> | PM | <input type="checkbox"/> |
| ADDRESS          | 1270 ABEL DEEN ST<br>HAWKESBURY, ON. | PO/VO No.       | 17380             | WORK LOCATION | SAME |                                     |    |                          |
| PROJECT          | F.P.I. on CROSS TUBES                | ACCEPTANCE STD. | ASTM 1417/051-038 | REV./DATE     | 2005 |                                     |    |                          |
| ITEM(S) EXAMINED | 7 PCS                                |                 |                   |               |      |                                     |    |                          |

|                 |  |        |           |          |               |         |           |         |
|-----------------|--|--------|-----------|----------|---------------|---------|-----------|---------|
| JOB DESCRIPTION | PROCEDURE No.  | LT-002 | REV./DATE | 2008     | TECHNIQUE No. | LT-1412 | REV./DATE | 2008    |
| PART No.        | SEE RESULTS  |        |           | MATERIAL | Aluminum      |         | THICKNESS | VARIOUS |
| SCOPE           | A. WET FLUORESCENT LIQUID PENETRANT EXAMINATION WAS COMPLETED ON THE EXTERNAL SURFACE 100% |        |           |          |               |         |           |         |

|                   |   |                                  |  |  |  |   |  |
|-------------------|---|----------------------------------|--|--|--|---|--|
| TEST DETAILS      |   |                                  |  |  |  |   |  |
| METHOD            | <input checked="" type="checkbox"/> FLUORESCENT | <input type="checkbox"/> VISIBLE | <input checked="" type="checkbox"/> WATER WASH | <input type="checkbox"/> SOLVENT REMOVABLE | <input type="checkbox"/> POST EMULSIFIED                       |   |  |
| FAMILY BRAND      | MAGNA FLUX                                      |                                  | BLACK LIGHT S/N                                | 16459                                      | <input type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup> | <input type="checkbox"/> AMBIENT < 2 fc |  |
| PENETRANT         | 2467  | MINIMUM DWELL TIME               | 15 MIN.  | LIGHTING EQUIP.                            | <input type="checkbox"/> FLASHLIGHT                            | <input type="checkbox"/> TROUBLELIGHT   | <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE |
| PENETRANT REMOVER | H2O   | MINIMUM DRY TIME                 | > 10 MIN.                                      | OTHER                                      | LAB 120  |   |  |
| DEVELOPER         | SKD 52  | MINIMUM DWELL TIME               | 10 MIN.  | LIGHT METER S/N                            | 1098966  | CAL DUE DATE                            | 7-19-08  |
| DEVELOPER TYPE    | <input checked="" type="checkbox"/> NON AQUEOUS | <input type="checkbox"/> AQUEOUS | <input type="checkbox"/> DRY                   | 2012.                                      |  |   |  |

|                     |                                       |  |   |                                       |  |
|---------------------|---------------------------------------|--|---|---------------------------------------|--|
| TEST SURFACE        |                                       |  |   |                                       |  |
| SURFACE CONDITION   | <input type="checkbox"/> AS GROUND    | <input type="checkbox"/> AS WELDED               | <input checked="" type="checkbox"/> MACHINED                | <input type="checkbox"/> SHOT BLASTED | <input checked="" type="checkbox"/> CLEAN BARE METAL |
| SURFACE TEMPERATURE | <input type="checkbox"/> < -4°C/ 20°F | <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F | <input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F | <input type="checkbox"/> > 52°C/125°F |  |

|   |       |     |   |
|---|-------|-----|---|
| RESULTS- <input checked="" type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL |       |     |   |
| W.O. CROSS TUBE   |       |     |   |
| 1   | 84263 | " " | ✓ |
| 1   | 84262 | " " | ✓ |
| 1   | 83088 | " " | ✓ |
| 1   | 86010 | " " | ✓ |
| 1   | 86011 | " " | ✓ |
| 1   | 85056 | " " | ✓ |
| 1   | 85057 | " " | ✓ |
| M/120709  |       |     |   |

**Scope of Services**  
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

**Standard of Care**  
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

|                         |                            |                     |           |
|-------------------------|----------------------------|---------------------|-----------|
| SIGNATURES              |                            |                     |           |
| CLIENT REPRESENTATIVE   | Andy Sheldon               | DTR #               | E-63666   |
| TECHNICIAN (SIGNATURE): | Mike Littleton             | REPORT REVIEWED BY: |           |
| NAME (PRINT):           | 1 <sup>st</sup> TECHNICIAN | NAME                | INITIALS  |
| CGSB LEVEL              | SNT LEVEL                  | CGSB LEVEL          | SNT LEVEL |
| CGSB REG. No.           | 6606                       | CGSB REG. No.       |           |

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY